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# Working as a healthcare professional on the frontlines during a pandemic

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# My Experiences as a Frontline Worker During the Pandemic

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**Abstract**

The changes associated with the pandemic affected healthcare delivery, patient experiences in the healthcare system, and workflow for frontline workers. Pathophysiology, transmission, and infection control practices are reviewed connecting how the unique characteristics of COVID-19 influenced healthcare changes. This paper represents the basis for a video presentation on the lived experience in a Midwest U.S. hospital of a frontline healthcare worker during the summer of 2020. This lived experience video was developed to reinforce good infection control practices of first year nursing students.

## My Experiences as a Frontline Worker During the Pandemic

The 2020 pandemic changed healthcare practices in the United States, especially those practices of frontline workers. This thesis will discuss the currently known information about COVID19 and the impact, I saw during my externship the summer of 2020, on the patients that were affected and the healthcare workers. The paper includes three different sections. The first section describes the pathophysiology, manifestations, and transmission process of COVID19. The second section includes public health infection control recommendations, which include fundamentals of infection control, personal protective equipment, and changes in hospital regulations. Lastly, the paper briefly describes a video presentation that will be used to share my firsthand experiences as a frontline worker. The primary audience of this video is first year nursing students to raise awareness and act as a wakeup call about the importance of basic nursing skills and concepts, which include handwashing and infection control. In addition, this personal narrative provides historical documentation and clarity to my lived experience.

## COVID19 Characteristics

### Pathophysiology

In December 2019, a novel coronavirus (COVID-19), formally called SARS-CoV2, caused a series of severe acute respiratory syndrome (SARS) cases in Wuhan, China (Yuki, Fujiogi, & Koutsogiannaki, 2020). This virus quickly spread to most regions of the world, causing a worldwide pandemic. Coronaviruses are large, enveloped, positive-stranded ribonucleic acid (RNA) that consist of a core of genetic material surrounded by a lipid envelope with distinctive protein spikes (Singh, Pritam, Pandey, & Yadav, 2020; Wiersinga, Rhodes, Cheng, Peacock, & Prescott, 2020). These protein spikes give the virus a "crown" looking appearance, which is why the term corona, which means crown in Latin, was used to name the coronavirus (World Health Organization, 2020). Coronaviruses originally circulate in a variety of different animals such as dogs, cats, chicken, cattle, pigs, and birds, but can spillover to humans due to zoonotic transmission from these animal reservoirs. It has been said that the full genome sequences of SARS-CoV2 reveals the closest similarity to the bat (*Rhinolophus affinis*), but the exact origin of the novel coronavirus remains unconfirmed (Singh et al., 2020).

When COVID19 enters the human body, it begins by adhering its protein spikes to angiotensin-converting enzyme 2 (ACE2) receptors through endocytosis and then rapidly replicates and releases its viral RNA (Sriram, Insel, & Loomba, 2020). This rapid viral uptake hinders the ACE2 receptors from preforming their normal function of regulating angiotensin II signaling, which can lead to improper regulation of blood pressure and inflammation in the body. Because ACE2 receptors are present in many cell types and tissues in the body, the virus can easily spread to many different areas of the body. Typically, COVID19 targets the type II pneumocytes in the alveoli of lungs because ACE2 are most prominent here. The alveoli of the lungs mediate gas exchange throughout the body and specifically the type II pneumocytes in the alveoli are responsible for the production of surfactant. Surfactant reduces surface tension and

prevent the alveoli from collapsing. Once SARS CoV2 replicates into the type II pneumocytes it causes a vascular integrity defect within the lungs caused by an increased capillary permeability and vasodilation, triggering an immune response to be exhibited (Singh et al., 2020). This immune response provokes the activation of biochemical cytokines and mediators associated with an inflammatory response. It then produces a cascade of physiological events, which can cause pulmonary edema, activation of disseminated intravascular coagulation (DIC), pulmonary ischemia, hypoxic respiratory failure, and progressive lung damage. Furthermore, SARS-CoV2 enters the blood from the respiratory tract and can travel throughout the various parts of the body including the brain, gastrointestinal tract, heart, kidney, and liver. It may lead to cerebral hemorrhage, neural disorder, ischemic stroke, coma, paralysis, and eventually death (Singh et al., 2020).

**Manifestations**

Once the virus has invaded the human body, the time from exposure to the onset of symptoms can vary between each individual person. The mean incubation period for COVID-19 is 5 (2-7) days and it is estimated that 97.5% of individuals who develop symptoms will do so within 11.5 days (one and a half weeks) of infection (Wiersinga, et al., 2020). The clinical manifestations, if they are present, vary in severity ranging from mild to severe. Those with severe symptoms tend to have an underlying medical condition such as hypertension, heart or lung disease, diabetes, immune deficiencies, and hypertension (CDC, 2020). Typically, the main symptoms include fever, cough, and shortness of breath, but may include fatigue, muscle or body aches, headache, new loss of taste or small, sore throat, congestion or runny nose, nausea or vomiting, and diarrhea. Many of these symptoms can be managed by an individual on their own, but if emergency warning signs appear, which include: trouble breathing, persistent pain or

pressure in the chest, new confusion, inability to wake or sleep, or bluish lips or face, then emergency medical care should be sought out.

The symptoms that present in a person with COVID19 can be further classified as asymptomatic, mild, moderate, severe, and critical. Asymptomatic patients can test positive for the virus but have no clinical symptoms and have normal chest imaging (Yuki, et al., 2020). Mild cases can present with symptoms of acute upper respiratory tract infection or digestive symptoms. Moderate cases can include pneumonia with no obvious hypoxemia and include lung lesions, which may appear on imaging of the chest. Severe cases will include pneumonia with hypoxemia. Lastly, in the most severe, or critical patients diagnosed with the COVID19 infection, life threatening may develop acute respiratory distress syndrome, shock, encephalopathy, myocardial injury, heart failure, coagulation dysfunction and/or acute kidney injury.

The length of time that COVID19 can affect a patient can vary depending on the onset of manifestations and the severity of the virus. Although viral nucleic acid can be detectable in throat swabs for up to 6 weeks after the onset of illness, several studies suggest that viral cultures are generally negative for COVID19 *2*-8 days after symptom onset (Wiersinga, et al, 2020). Given the fact, if someone has tested positive for the virus, the CDC (2020) recommends isolating for at least 10 days after symptom onset and 3 days after improvement of symptoms. These recommendations have been developed to reduce the spread of the virus, however, some studies found that an estimated 48- 62% of transmission may occur via pre-symptomatic carriers.

**Transmission**

The exact mode of transmission for the COVID19 virus has been questioned since the start of the pandemic. At the start of the pandemic it was thought that COVID19 was an airborne

virus, but further studies have found that the main mode of transmission is indeed droplet (Wilson, Norton, Young, & Collins, 2020). Wilson et al (2020) reports that the virus is easily spread from person-to-person through respiratory droplets during talking, sneezing, and coughing. Prolonged exposure to an infected person (being within 6 feet for at least 15 minutes) and briefer exposures to individuals who are symptomatic, like those that may be coughing, are associated with higher risk for transmission (Wiersinga, et al, 2020).

Once these respiratory droplets become inhaled, they are deposited into the lungs and start to rapidly spread throughout the body. Though this virus spreads primarily through droplets, the virus could become airborne if an aerosol generating procedure (AGP) is preformed within a healthcare setting. Some AGP's can include positive pressure ventilation, tracheal intubation, airway suctioning, nebulizer treatment, and bronchoscopy (Wilson, et al, 2020). Depending on what an individual healthcare worker could be exposed to, the proper personal protective equipment (PPE) must be worn to mitigate that exposure.

COVID19 can also be spread through contact with infected surfaces, which means the virus can be transmitted by an individual touching a surface that has viral droplets on it (Wiersinga, et al, 2020). In the healthcare setting, this type of transmission is termed contact and is based on the amount of time the virus sticks to certain surfaces. Persons encountering (contacting/touching) this virus-containing surface may transfer that virus to their eyes, nose, or mouth which can initiate an infection. The amount of virus on a surface, or viral load, appears to persist at higher levels on impermeable surfaces, such as stainless steel and plastic, rather than on permeable surfaces, such as cardboard. Studies have found that the COVID19 virus has been identified on impermeable surfaces for up to 3 to 4 days after inoculation, however, it is thought that the amount of virus detected on surfaces decays rapidly within 48 to 72 hours (about 3 days).

Since the detection of the virus has been found on these surfaces for prolonged periods of time, the potential for transmission via fomites (objects such as a doorknob, cutlery, or clothing that may be contaminated with COVID19 particles) should also be considered. Due to the possibility that the virus could be present on a surface, the need for proper disinfecting and environmental hygiene has been reinforced.

## Public Health Infection Control Recommendations

### Fundamentals of Infection Control

Nightingale (1860) introduced the idea of infection control to British army hospitals during the Crimean war. Cleanliness and sanitation are the cornerstone of Nightingale's practice, which prevails in modern healthcare and nursing practices focused on the control of micro-organisms such as bacteria, fungus, and viruses. To reduce the spread and exposure to the COVID19 virus, proper infection prevention and control (IPC) measures are enforced for routine healthcare delivery. One of the many techniques that healthcare associates follow to protect themselves from a transmission-based disease process is utilizing personal protective equipment (PPE), which can include a facemask, face shield or goggles, gown, gloves, and even shoe coverings (CDC, 2020).

As a nursing student, infection control measures such as PPE were taught early in my nursing programs. The importance of PPE use and how to properly go about putting on (donning) and taking off (doffing) PPE gear is fundamental for a nurse and patient safety (CDC, 2020). One way we practiced this skill was by providing each student with PPE gear and go about donning and doffing the gear all together as a fun learning activity. In addition to learning about proper PPE usage, hand hygiene was also taught to us as first year nursing students. We

used special lotion that illuminates in UV light to ensure that proper hand hygiene was followed. Though these skills can be seen as a fun way to learn about following IPC guidelines and mingling with other students in a nursing cohort, the true importance of adhering to standard and transmission-based precautions and proper hand hygiene should not be overlooked especially when caring for a patient with the COVID19 virus. If hand hygiene or PPE donning and doffing are done incorrectly, this could lead to direct exposure with the virus thus potentially leading to transmission, spread or disease manifestation.

Based on a patient's medical diagnoses, certain transmission-based precautions should be implemented by the healthcare staff in order to prevent exposure and reduce the spread of the infectious pathogen (CDC, 2020). The transmission-based precautions can include contact, droplet, and airborne precautions. Based on the particular transmission type, different infection control guidelines are implemented and certain PPE are required. Since COVID19 is spread through respiratory droplets, a droplet transmission-based precaution must be implemented. The guidelines for droplet precautions include placing a patient in a single room, limiting transportation and movement of the patient (if a patient must be transported then they must wear a mask), and lastly healthcare staff must use PPE appropriately (CDC, 2019, p.72). A mask is the most crucial respiratory protective item. Masks comes in several different types to provide different levels of protection (University of California Merced, 2020). According to the CDC (2019, p. 54) a surgical mask is the standard mask and it can protect against large droplets and splashes. An N95 mask is much more protective than a surgical mask and can protect against airborne transmissible microorganisms. Lastly, a respirator is the most protective mask that can be utilized by a healthcare associate because it has a built-in filter to protect against airborne

transmissible microorganisms. Both the N95 and the respirator mask require fit testing to ensure the mask is worn properly and that the right size is selected for the healthcare associate.

**Personal Protective Equipment**

During the pandemic, U.S hospitals were constantly enforcing proper hand hygiene and adjusting their PPE guidelines in order to preserve their PPE gear while also maximizing the safety of its healthcare team. The abrupt outbreak of COVID19 and its rapid spread over many healthcare systems throughout the world led to a shortage in PPE which could not be solved by reducing their usage or by increasing production (Boskoski, Gallo, Wallace, & Costamagna, 2020). To combat the shortage, the distribution of PPE had to be limited and prioritized to those most at risk and even reused. Though PPE is typically manufactured for one-time usage, during the pandemic certain measures were adapted to avoid excessive waste of PPE. These measures can include reusing a respirator mask while caring for multiple patients who have the same diagnosis, because respirators can maintain their integrity for extended periods of time. If a facility was limited in its PPE supply, sometimes the PPE would be specifically designated to at-risk personnel including nurses preforming AGP, working in the emergency department (ER), intensive care unit (ICU), or those working on a strictly designated COVID19 unit in order to accommodate the crisis capacity (CDC, 2020). Those healthcare workers that were not considered at-risk were provided with a basic surgical mask to protect themselves rather than an N95.

In addition to proper PPE usage, hand hygiene and environmental sanitation are just as crucial in reducing exposure risk to COVID19. The CDC (2020) recommends using an alcohol-based hand rub with 60-95% alcohol in the healthcare settings unless hands are visibly soiled. If

the hands are visibly soiled, prior to eating, and after using the bathroom, hands should be washed with soap and water for at least 20 seconds. In regard to cleaning and disinfecting areas of the hospital, this should be done prior to touching a surface such as a computers keyboard or disinfecting all rooms after a patient was discharged. These areas can be cleaned with disinfectants approved by each facility's designated recommendations.

**Changes in Hospital Policies**

Due to the COVID19 pandemic, U.S healthcare facilities had to develop new policies and tighten regular guidelines to ensure safety for both patients' and healthcare workers (OSHA, 2020). If a patient or a healthcare worker, which includes any employee of the healthcare facility, not just frontline workers were to enter a hospital during this time, they would notice that many things had changed. Regular points of entry to a facility had to be closed off or limited. These changes allowed for only one designated entrance/exit location for employees and the ER entrance was designated for all patients that wanted medical treatment. Limiting the points of entry at a facility allowed control and consistent monitoring of those entering/exiting the building (CDC, 2020).

Daily work routines for healthcare associates were also changed to meet new protocols and regulations established by the healthcare system. Prior to entering the facility, all healthcare associates were required to have their temperature taken and given a surgical mask. These measures were used to enhance source control, which means developing a system where a facility limits the number of sources the virus could enter the facility (CDC, 2020). If the employee member had a temperature of or above ≥100.0°F they were sent home and encouraged to be tested for the virus and quarantine.

Another change was wearing a mask. During the whole shift, the staff members were required to wear a mask. Those caring for patients that tested positive for the COVID19 virus were required to wear an N95 or a respirator and follow proper hand hygiene and environmental sanitation measures (OSHA, 2020). Many units in the hospital were also transformed into a designated COVID19 unit. This designation was another source control measure to limit or isolate COVID19, but frontline healthcare personnel assigned to that unit had to adjust and accept the change no matter the circumstances despite their fear of potentially being exposed to the virus. Some healthcare associates were restricted from entering a room with a suspected/positive COVID19 patient. This included environmental services, dietary, therapies, and sometimes even nurse aides. Though this strategy limited potential exposure to some members of the healthcare team, this can be stressful and add to the workload of the Registered Nurse or those providing care to the patient.

All patients within the healthcare system were greatly affected by the regulations that were required. Just like the healthcare associates, all patients entering through the ER had to get their temperature taken and were given a mask before entry. The patient was immediately triaged and screened for COVID19 related symptoms. Those with any symptom were either immediately placed within the ER or sent to an isolated waiting room (OSHA, 2020). Once a room opened up in the ER, the patient was evaluated by an ER doctor and their plan of care was decided. The decision would be either to admit or send the patient home.

Criteria for admission to the hospital was also changed due to limited beds and supplies on each unit. Many hospitals were filled to capacity, so doctors had to be selective on those that were stable enough to recover at home and those that were critical enough to receive a bed on a unit once one became available. Medical equipment, including ventilators, were in low supply.

In some cases when a ventilator was not available and a patient came in requiring a ventilator, medical staff could only provide other measure, such as breathing treatments or supplemental oxygen, but sometimes this would not be enough to save the patient's life (FDA, 2020).

Just like some units at the hospital, many wings within the ER were specifically designated for those suspected of having the virus. “Clean” areas were designated for those patients without any visible signs and symptoms of the virus. Though there were specific areas designated for COVID19 patients, this system was not perfect. As indicated in the section on transmission, those suspected of having the virus may initially test negative for COVID19 and those without any evident symptoms may test positive. Due to this challenge of not knowing who may or may not have the virus, all visitors were restricted from entering the hospital (CDC, 2020). Though restricting visitors was essential in limiting the spread of the virus, all patients were greatly impacted by this change. Patients had to battle through their medical condition without their loved ones to support them through this vulnerable time whether they were admitted with COVID19 or not. Frontline workers had to step in and try to console the patient during rough periods, or even be there to support a patient during their last moments.

## Video Presentation

The previous sections describe what is currently known about COVID 19 related to pathophysiology, transmission, and mitigation practices. What is does not describe is the lived experience of a frontline worker and the impact this pandemic has had on our society. To explore this perspective a choice was made to use multimedia. The video presentation is based on a technology, entertainment, and design (TED) talk process. This is a new and upcoming way to verbally express meaningful information to an audience in under 18 minutes (TED, 2020). Unlike non-verbal presentations, such as a PowerPoint. Multimedia is a way to verbally express

information in a way where the audience is able to view the presenter and interpret their tone and non-verbal cues. This allows the audience to feel empathy and assist in understanding the impact the topic has on the presenter. This type of presentation becomes an interactive learning experience for the audience and can capture their attention through unconventional means. A recent study was done on undergraduate nursing students that analyzed the impact of a TED Talk when conveying information, and it was found that a TED talk successfully conveyed the impact of communication as a foundational competency, the importance of empathy, and professional role development (Hillier, Luff, & Meyer, 2020).

The main reason multimedia was chosen to convey my experience of working on the frontlines during a pandemic was to grab my audience's attention about the topic and convey empathy. Though my experiences have strengthened me as a nursing student, they have also deeply impacted me in a way that any non-verbal reflection could not do justice. I want my audience to hear emotion in my verbal tone. I want them to know exactly what it was like caring for patient's battling the COVID19 virus through all of the good and horrible times. The goal is to raise awareness that infection control measures are important, but seeing what it was like working on the frontlines during a pandemic may act as a wakeup call for first year nursing students. The importance of fundamental nursing skills goes beyond infection control and includes therapeutic communication, empathy, and end-of-life care.

One of the main aspects discussed in the video response is about my experiences as a float patient care technician (PCT) and nurse intern in the emergency department. During the beginning of the pandemic specifically from April to May, I worked as a PCT and floated to different units throughout the hospital. Some of these units would be designated COVID19 units. The first time I was floated to a COVID19 unit I got to see exactly how the virus had changed

the hospital's work atmosphere, and directly care for people who had COVID19. Right away I sensed the tension and fear among the other frontline workers, but it was the patients that affected me the most. I cared for patients with only one concern; make it through another night. I didn't expect to witness the severity of the virus my first day on a COVID19 unit. I ended up having to be there and watch one patient be taken of his CPAP and pass because the virus was consuming him whole. In June, I transitioned into the role of a nurse intern in the and new obstacles and tensions quickly presented itself to me. I was able to experience my first intubation and preform CPR, and even though these are great skills for a nursing student to accomplish, there was still constant fear that every patient may have the virus. I could've been exposed to the virus if I didn't properly protect myself. These experiences and more will be discussed in further detail within the TED Talk so that I can verbally express how these affected me and communicate exactly what it was like working on the front lines as a healthcare associate.

The purpose of this thesis was to explore what is currently known about COVID19 and the impact I saw during my nursing internship the summer of 2020. In addition, a video narrative was produced to share my lived experience working with the patients that were affected by COVID 19 with future nursing students.

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